

## PATENT COOPERATION TREATY

PCT

REC'D 10 DEC 2004

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## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)



Rec'd PCT/PTO 24 FEB 2005  
10/525476

Applicant's or agent's file reference TS 9527 PCT	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 03/09575	International filing date (day/month/year) 27.08.2003	Priority date (day/month/year) 27.08.2002
International Patent Classification (IPC) or both national classification and IPC B08B9/00		
Applicant SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ B.V.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
  - ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:
  - I ☒ Basis of the opinion
  - II ☐ Priority
  - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - IV ☐ Lack of unity of invention
  - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - VI ☐ Certain documents cited
  - VII ☐ Certain defects in the international application
  - VIII ☐ Certain observations on the international application

Date of submission of the demand  19.03.2004	Date of completion of this report  13.12.2004
Name and mailing address of the international preliminary examining authority:   European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer  van der Zee, W  Telephone No. +31 70 340-2797  

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/EP 03/09575**

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-12 as originally filed

**Claims, Numbers**

1-10 received on 19.11.2004 with letter of 19.11.2004

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

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**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes: Claims	1-10
	No: Claims	
Inventive step (IS)	Yes: Claims	1-10
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

**2. Citations and explanations**

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

1. Reference is made to the following documents:

D1: US-A-3355902

D2: US-A-4793841

2. The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and discloses (the references in parentheses applying to this document) a method of removing solid carbon dioxide from cryogenic equipment, comprising the steps of:
  - (a) introducing a stream including a liquid to said cryogenic equipment to convert solid carbon dioxide to liquid form whereby a mixture of the liquid and liquid carbon dioxide is formed (column 5, lines 48-55); and
  - (b) removing the mixture of the liquid and liquid carbon dioxide from the cryogenic equipment (column 5, lines 55-72).

The subject-matter of claim 1 therefore differs therefrom in that the liquid is ethane.

The subject-matter of claim 1 is therefore novel and claim 1 meets the requirements of Article 33(2) PCT.

The problem underlying claim 1 is to improve the efficiency of removal of solid carbon dioxide through dissolution, cf. page 3, lines 4-6 and page 4, lines 23-25.

Although D2 discloses the use of liquid ethane as such, cf. column 4, lines 17-38 and column 8, line 12, the skilled person is not prompted at a combination of D1 and D2, because D2 is neither directed to the problem of improving the efficiency of removal of solid carbon dioxide through dissolution nor solves this problem.

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The subject-matter of claim 1 thus involves an inventive step and meets the requirements of Article 33(3) PCT.

3. Dependent claims **2-10** are all truly dependent claims and also meet the requirements of Article 33(1) to 33(5) PCT.
4. The following is to be noted too:
  - 4.1 The description is not in conformity with the claims as required by Rule 5.1(a)(iii) PCT.
  - 4.2 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the document D1 has not been identified in the description and its relevant background art has not been briefly discussed.